

# Coccidæ of Japan, V

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IMPERIAL AGRICULTURAL EXPERIMENT STATION  
NISHIGAHARA, TOKYO, JAPAN

## I. *Xylococcus napiformis* n. sp.

(Plate I, Figs. 1-9)

*Adult female*—Napiform, skin smooth and polished; yellowish brown with dark brown codal tubercle. Mouth parts large, rostral setæ long. Antennæ and legs completely wanting. Codal tubercle bears very long white hair-like threads.

*Egg*—Elliptical, pale pinkish with pink spot. Length, 0.34 mm.; width, 0.17 mm.

*First larval stage*—Elliptical in form; pinkish purple in color. Antennæ composed of three segments; segment III the longest and bears several rather long hairs. Legs rather slender; femur very short; claw very large and curved; digitules wanting. Lateral margin of abdominal segments with a series of strong spines. Anal opening bears four large rod-like processes. Abdominal end with two very long hairs. Length, 0.40 mm.; width, 0.19 mm.

*Habitat*—On *Quercus serata*, collected by the writer and others at Nishigahara, Tokyo, and other places of the empire. The body of female is imbedded in the tissues of bark of the host plant and the position of the insect is indicated by a gall-like swelling on the surface. To Mr. T. D. A. Cockerell, the writer is under great obligations for assistance in the determination of the species.

## II. *Phenacoccus azaleæ* n. sp.

(Plate II, Figs. 10-12)

*Adult female*—Elliptical in form, tapering toward the anal end; pale brick to brick in color with the median line paler; legs and antennæ are a little brown; thinly covered with snow-white cottony secretion. Ovisac elongated, sides nearly paralleled,

straight or curved, white, cottony and almost entirely overlapping the body of the insect. Antennæ composed of nine segments, of which segment II is the longest, III a little shorter than II, and VIII the shortest; all the segments hairy; formula of three examples given below:

II, III, (IV, V, IX), (I, VI), (VII, VIII).

II, III, (V, IX), (I, VI, VII), IV, VIII.

II, III, (V, IX), IV, (I, VI), (VII, VIII).

Mouth parts small, the rostral setæ rather short. Legs subequal; tibia three times as long as the tarsus; claw strong and curved with teeth in the inner margin; digitules of tarsus slender while those of the claw short and stout. Derm thick, set with fine hairs and numerous simple spinnerets. Anal lobes indicated by a long hair and several short spiny hairs, and there is a conspicuous group of spinnerets surrounding the base of the hair. Anal opening with six prominent hairs.

Length, 3 to 3.5 mm.; width, 2 to 2.5 mm.; ovisac, 6 to 12 mm.

*Egg*—Oblong in form; pale lemon in color. Length about 0.25 mm; width, 0.11 mm.

*First larval stage*—Oval in outline; yellowish in color; eyes red and prominent. Antennæ six-segmented, segment VI as long or even longer than the three preceding segments together. Mouth parts very large. Legs large; tibia and tarsus about equal in length. Side of the body with a series of spines. Front of the head between antennæ with two hairs. Anal lobes with one long hair and one short spine. Length, 0.3 mm.; width, 0.15 mm.

*Habitat*—This new species lives on small branches and under-side of leaves of azalea. It is closely allied to *Phenacoccus pergandei* Ckall., from which it may be separated at once by the smaller size.

III. *Eriococcus festuæ* Kuwana et Fukaya (n. sp.)

(Plate II, Figs. 13-14).

*Ovisac of female*—Closely felted and tough; pale straw or white in color; elongated, convex, with many inconspicuous

transverse ridges; codal extremity with a small opening. Length, 3.5 mm.; width, 1.3 mm.

*Adult female*—Elongate in form; pale yellow in color, after treatment with KOH turned light pink. Derm with numerous strong spines and many fine slender hairs and a small circular cells. Lateral margin of abdomen with a series of very strong spines which are very much stronger than those on the derm. Mouth parts small; rostral setæ short. Antennæ short, composed of six or seven segments; last few segments bear many long hairs; formula of two examples given below:

Six-segmented antennæ .....III, II, VI, I, (IV, V).

Seven-segmented antennæ.....IV, III, VII, II, I, VI, V.

Legs stout; tarsus slightly longer than tibia. Anal ring with eight prominent hairs. Abdominal lobes normal; each with one long and two or more short spines. Length, 2.0 mm.; width, 1.1 mm.

*Egg*—Elliptical, lemon in color. Length, 0.3 mm.

*Habitat*—On *Fistica parvigluma*, Nishigahara, Tokyo. Collected by C. Fukaya of this station, June, 1910. This new species is closely allied to *Friococcus insignis* Newst. and also *E. greeni* Newst., from which it may be distinguished by arrangement of spines of abdominal segments.

#### IV. *Pulvinaria citricola* n. sp.

(Plate II, Figs. 15-19)

*Adult female*—Oblong oval in form, moderately convex above; pale olive in the color with yellowish dorsal line; shrivelling after gestation and flavus with dark irregular lines near the margin. Ovisac snow white, rather long with two conspicuous dorsal ridges to form a deep median furrow. Antennæ composed of eight segments; segment III the longest and VII the shortest; the last segment with many long hairs: formula, III, IV, (II, VIII), (I, V), (VI, VII). Mouth parts small; rostral setæ short. Legs subequal, short and stout; tarsus one-half the length of tibia; claw short and curved; digitules usual. Marginal hairs simple but occasionally divided. Stigmatic

indentation not well defined, with three stout hairs of which the median long with two short. Anal cleft shallow. Triangular plates large; the inner edge the longest, base almost equal with outer edge, apex with several strong hairs.

Length about 4 mm.; width, 2.5 mm.; ovisac about 4-7 mm.; body with ovisac about 9 mm.

*Egg*—Oblong, white. Length about 0.28 mm.; width about 0.17 mm.

*First larval stage*—Oval in form, pale in color. Length about 0.38 mm.; width, 0.24 mm.

*Habitat*—On citrus in Okayama, Shizuoka and on Persimmon (*Diospyros kaki*), *Hibiscus syriacus*, citrus and other plants in Tokyo. One generation a year and very injurious to citrus in Shizuoka and Okayama. It is closely allied to *Pulvinaria cellulosa* Green.

#### V. *Pulvinaria photiniae* n. sp.

(Plate II, Figs. 20-24)

*Adult female*—Elliptical in form, convex; grayish black with yellowish-brown marking on the dorsal line; more or less covered with white cottony secretion. Ovisac white, rather firm in texture, long, two well-marked longitudinal ridges with many cross ridges. Antennæ with eight segments; usually segment III the longest, sometimes III and IV are almost equal in length; formula of two examples given below:

III, IV, II, (V, VIII), I, VI, VII.

III, IV, (II, VIII), (V, I), VI, VII.

Mouth parts well formed, rostral setæ very short. Legs stout, short and subequal with few hairs; coxa very large, femur longer than tarsus; tarsus slightly longer than one-half length of tibia; claw large, curved; digitules normal. Marginal hairs short and simple. Stigmatic indentation shallow with three strong spines, of which the median one very long while other two shorter than the marginal hairs. Derm crowded with many round cells. Triangular plates broad; base about equal with

outer edge; together approximately quadrate; apex of the plate with five hairs.

Length, 5-6 mm.; width about 4 mm.; ovisac, 6-9 mm.

*Egg*—Oblong, very pale yellow. Length, 0.27 mm.; width, 0.15 mm.

*First larval stage*—Oval and flat; pale yellow, eyes dark purple. Antennæ six-segmented; the last segment the longest. Length about 0.30 mm.

*Habitat*—On *Photonia villosa*, and *Celtis sinensis*, Nishigahara, Tokyo. Collected by the writer and others, May, 1912.

#### VI. *Pulvinaria okitsuensis* n. sp.

(Plate III, Figs. 25-29)

*Adult female*—Lemon yellow in color, derm slightly powdered with white mealy secretion. Elliptical in form, slightly convex; derm soft, shrivelling after gestation. Ovisac white, elongated, straight or curved. Antennæ composed of seven or eight segments, usually eight; in the former, segment IV the longest, while in the latter case, segment III the longest; each segment with long slender hairs; formula of two examples given below:

IV, III, II, VII, I, V, VI.

III, II, VIII, IV, V, (VI, VII, I).

Mouth parts small and stout; rostral setæ short. Legs subequal; coxa large and much longer than wide, with several short hairs; trochanter small and slender, with one long and one short hair; tarsus longer than one-half the length of tibia; claw stout, curved; digitules on tarsus rather short and stout, while those on the claw very stout. Marginal hairs slightly dilated or simple. Stigmatic indentation not well defined, with three stout spines, those of the middle one very long, while the other two are very short, shorter than the marginal hairs. Derm crowded with irregularly oval or round cells. Triangular plates small, together approximately square; base equal to outer edge; outer angle rectangular; apex with several hairs; two prominent hairs on about the middle of the plates.

Length about 2-3 mm.; width, 2 mm.; ovisac, 5-9 mm.

*Egg*—Oblong and white; length about 0.27 mm; width, 0.16 mm.

*First larval stage*—Oval in outline; pale yellow in color, with eyes black. Antennæ six-segmented, segment III the longest.

*Habitat*—On orange, in Okitsu, Shizuoka-Ken. Collected by the writer, May, 1912.

This new species is allied to *Pulvinaria thespesiæ* Green, but much smaller and distinguished by the shape of the triangular plates; in this species the outer angle of the triangular plate is irregular, while that in *P. thespesiæ* is broadly rounded. Differs also in the relative length of antennal segments.

VII. *Pulvinaria idesiæ* n. sp.

(Plate III, Figs. 30-35)

*Adult female*—Dark green with yellow marking; oval or nearly round, slightly convex, derm soft, shrivelling after gestation. Ovisac white, with a deep median longitudinal groove and many cross ridges. Antennæ usually eight-segmented, but seldom only seven; segment III the longest; all segments bear rather long hairs; formula of four examples as follows:

III, (II, IV), V, VIII, VI, (VII, I).

III, II, IV, V, (VI, VIII), I, VII.

III, II, (IV, V), (VI, VIII), I, VII.

III, II, IV, V, VI, VII, I.

Mouth parts well formed; rostral setæ rather long. Legs stout, subequal; coxa much longer than wide; trochanter with one long and few short hairs; femur about equal with tibia in length; tarsus shorter than one-half of tibia; claw short and curved; digitules rather short. Marginal hairs simple; stigmatic cleft shallow with three usual spines, of which the median one is very long. Derm with scattered small circular cells. Triangular plates very prominent; inner edge longest; base and outer edge about equal; apex bluntly pointed; outer edge slightly curved; apex with several spines.

Diameter about 4-7 mm.; length with ovisac, 8-10 mm.; ovisac, 4-6 mm.

*Egg*—Oblong, pale yellow. Length about 0.35 mm.; width, 0.16 mm.

*First larval stage*—Elliptical, pale yellow with red eyes. Length about 0.20 mm.; width, 0.11 mm.

*Habitat*—On *Idesia polycarpa*, and *Phellodendron amurensis*, Nishigahara, Tokyo. Collected by the writer and others, May, 1911. This new species is allied to *Pulvinaria horii* Kuw. but much smaller in size.

VIII. *Lecanium (Eulecanium) pseudomagnoliarum* n. sp.

(Plate III, Figs. 36-39)

*Adult female*—Elongated oval, slightly convex; dark olive in color with dark brown dots. Antennæ composed of eight segments; segment III the longest, but only a little longer than IV; the terminal segment bears many long hairs; formula, III, (VIII, IV), V, II, VI, VII, I. Mouth parts small but well formed; rostral setæ short. Legs small and alike; tarsus about three-fourths length of tibia; claw small, curved and sharp; digitules usual. Stigmatic indentation not well defined, with three usual spines, the median one more than twice as long as the others. Triangular plates together near square; base and outer edge almost equal; three spines near apex.

*Egg*—Oval, pale yellow; length about 0.26 mm.; width, 0.11 mm.

*First larval stage*—Oval, pale yellow in color with black eyes. Antennæ six-segmented.

*Habitat*—On citrus in Tokyo and Shizuoka, found by the writer and others, May, 1912. This new species is allied to *Lecanium (Eulecanium) magnoliarum*, but much smaller and quite different in the antennal formula and the shape of triangular plates as shown in the figures.

IX. *Lecanium (Eulecanium) magnoliarum* Ckll.

On *Berberis nepalensis* (Hiiragi-Nanten) in Tokyo and on grape vine in Shizuoka-Ken. Collected by C. Fukaya and K. Yoshida, May, 1912. This is the first time that the writer has seen the species in Japan.

(Nishigahara, Tokyo, Japan, May, 31, 1913).

## EXPLANATION OF PLATES

## PLATE I.

*Xylococcus napiformis* n. sp.

- Figure 1. Infested twig of *Quercus serata*.  
 Figure 2. Adult females.  
 Figure 3. Section of a twig showing that the female is imbedded in the tissues of bark of the host.  
 Figure 4. Abdominal end of female.  
 Figure 5. Eggs taken out of the female body.  
 Figure 6. First larval stage.  
 Figure 7. Antennæ of the same.  
 Figure 8. Abdominal end of the same.  
 Figure 9. Leg of the same.

## PLATE II.

*Phenacoccus azaleæ* n. sp.

- Figure 10. Antennæ of adult female.  
 Figure 11. Leg of the same.  
 Figure 12. Claw of the same.

*Eriococcus festucae* Kuwana and Fukaya, (n. sp.)

- Figure 13. Antennæ of female.  
 Figure 14. Marginal spines of the same.

*Pulvinaria citricola* n. sp.

- Figure 15. Antennæ of female.  
 Figure 16. Marginal hairs and stigmatic spines of the same.  
 Figure 17. Triangular plates of the same.  
 Figure 18. Leg of the same.  
 Figure 19. Claw of the same.

*Pulvinaria photiniae*

- Figure 20. Antenna of female.  
 Figure 21. Stigmatic spines of the same.  
 Figure 22. Marginal spines of the same.  
 Figure 23. Leg of the same.  
 Figure 24. Claw of the same.

## PLATE III.

*Pulvinaria okitsuensis* n. sp.

- Figure 25. Antenna of female with seven segments.  
 Figure 26. The same with eight segments.  
 Figure 27. Leg of the same.  
 Figure 28. Stigmatic spines and marginal hairs of the same.  
 Figure 29. Triangular plate of the same.

*Pulvinaria idesiae* n. sp.

- Figure 30. Antenna of female.  
 Figure 31. Leg of the same.  
 Figure 32. Claw of the same.  
 Figure 33. Stigmatic spines of the same.  
 Figure 34. Marginal hairs of the same.  
 Figure 35. Triangular plates of the same.

*Lecanium pseudomagnoliarum* n. sp.

- Figure 36. Antenna of female.  
 Figure 37. Leg of the same.  
 Figure 38. Claw of the same.  
 Figure 39. Stigmatic spines and marginal hairs of the same.